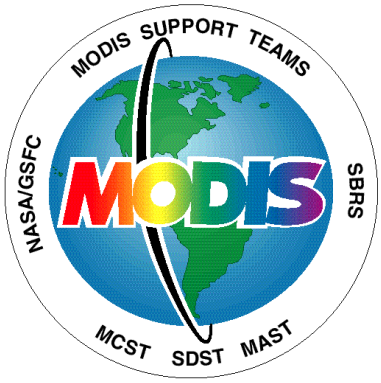

DAAC-MCST Understandings Document

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1 Introduction

1.1 Document Purpose

This document is to formalize the understanding of the operational interfaces and procedures between the Goddard Distributed Active Archive Center (GDAAC), consisting of the AM1 Contingency Data and Information System (ACDIS) and the EOSDIS Core System (ECS), in support of the MODIS Characterization Support Team (MCST).

1.2 Executive Summary

The GDAAC will be responsible for distributing MODIS L0, L1A and L1B products to MCST via a T3 network connection. The GDAAC will provide a "backup" method of data distribution using the ACDIS system to generate DLT 7000 tapes. MCST will adhere to an 88 Gigabyte/day data limit. However, there may be an occasional order that could be above the 88 Gigabyte/day limit. All orders will be submitted at least 24 hours in advance following the subscription template for email subscriptions.

2 Data Subscription Interface

All data sets received from the AM-1 instrument are available through the GDAAC, which is the primary point of contact between the satellite's data and the research community for Level 1 products.

MCST and the GDAAC have agreed upon an e-mail interface that we will use to submit our "Daily Subscriptions." Appendix 'A' shows the format for the e-mail. The GDAAC has agreed not to modify this template without first informing MCST so that the changes will not break our automated system. MCST will enter subscriptions at least 24-48 hours in advance. The ECS DST representative can also redirect the data to ACDIS at MCST's request.

2.1 GDAAC data subscription modes

There are two modes in which prospective data can be received from the GDAAC: EDS L0 data for a limited amount of time-critical data and PDS data for the bulk of our "Daily Subscriptions." There is also a slow public access web gateway for retrospective orders from the GDAAC archives, if needed. Retrospective orders are in PDS form only. Each is discussed in more detail below.

2.1.1 EDS Data (Quick-look)

The amount of EDS L0 data agreed upon by the MODIOT and the FOT is 2% of the daily raw data volume. This limit may be stretched up to 5% under extreme circumstances. The 2% limit translates to 30 minutes of data. The maximum EDS data that would be received is 4.5 GB per day. MCST has a permanent subscription for all EDS L0 data that arrives at the GDAAC. Unless instructed otherwise EDS data will be sent via the T3.

2.1.2 PDS Data

MCST has negotiated with the GDAAC to receive 88 gigabytes of PDS data per day during A&E in PDS L0, L1A, Geolocation, and L1B formats. This limit was established by the MCST Team Leader, as the amount needed for MCST to perform our calibration tasks. At this time the data can be requested by start time, stop time, and the ESDT data format (L0, L1A, Geolocation, or L1B format.) Other metadata qualifiers are being investigated and tested.

2.1.3 V0 Gateway

The V0 Gateway is an HTML interface that allows ordering of retrospective data. This data can be delivered by FTP push/pull or by 8mm tape. This facility will be used sparingly since MCST is already acquiring a large amount of data on a daily basis.

3 Data Notification Interface

Once the subscription has been transmitted, ECS will notify MCST of the subscription status through a series of e-mail messages. The format specifications of those messages are described in Appendices B-E, but the general idea is:

1) Message stating that the subscription has been received by the ECS system.
2) Message stating that the subscription has been entered into the system.
3) Message stating that data responsive to the subscription has just been entered into the archive.
4) Message stating that FTP push of the data to MCST systems has either succeeded or failed.
5) Message stating that subscription has expired.

All of these notification messages will be tagged with an MCST generated identification string entered as part of the original subscription request.

4 Processing

4.1 GDAAC processing times

The files that arrive at the GDAAC are already broken into two hour chunks. Higher level products are generated at the GDAAC, notably L1A, Geolocation, and L1B data. MCST does not expect such processing to require more than 24 hours for a given order, but this has yet to be confirmed. The GDAAC did not have definitive benchmarks of their processing system. They expect to have these figures by TBD.

4.1.1 EDS processing times

Since GDAAC performs no preprocessing on EDS data, delivery time to MCST is drastically reduced. White Sands will download the data and buffer it. It will not perform any PDS L0 processing so that it may send the data on to EDOS within four hours.

EDOS will do no processing either. EDS L0 data will be divided into a maximum size of 2GB files. EDOS passes the data on to the GDAAC, where a permanent subscription

event triggers the data movement to MCST. The time required from White Sands to the GDAAC will be less than four hours. The transfer time to MCST is TBD once the T3 is installed.

4.1.2 V0 gateway processing times

The time required from data order to delivery through the V0 gateway is unknown; the GDAAC has not completed development of this system. For now, it is likely to be extremely slow; use of the V0 gateway should be limited as much as possible.

5 Data Transmission

5.1 Supported File Sizes

The GDAAC delivers data in granules. A granule is simply a temporally co-located chunk of data from a single instrument in a single file. L1A, Geolocation, and L1B data products are grouped into five-minute granules. PDS L0 data is grouped into two-hour chunks and EDS L0 data comes in whatever size was requested.

5.2 Network Delivery

A point to point T3 network connection from the MCST router in Building 32/C101 at Goddard to a router in MCST's Suite 104 will transfer all of the data. A T3 network connection will provide rapid and reliable transmission 24 hours a day, seven days a week of the entire MCST data request. A network solution requires no manual intervention, and allows file transfer to begin as the GDAAC produces them. In the event that the T3 will be down for an extended amount of time, MCST will inform the GDAAC to redirect all subscriptions to ACDIS.

6 Backup Data Transfer

The dedicated network, while quite reliable, is a single point of failure. For this reason, ACDIS is the backup solution for data delivery. In the event of a long-term network failure, ACDIS will take over as a temporary solution until the problem is solved. ACDIS will write MCST's data to DLT 7000 tape and MCST personnel will pick up the tapes. The backup data delivery path for EDS L0 data is the existing FNS network connection between Goddard and MCST, unless MCST requests the data be sent to ACDIS.

In the backup scenario, ECS will send the data to ACDIS. The data will transfer to a local ingest disk on the ACDIS the data will remain on the disk for TBD. Following each push of data ECS will send ACDIS (and MCST) an e-mail of all files contained in the transfer. The ECS DST will perform QA checking to ensure all data pushed from ECS transferred to ACDIS successfully. After the DLT tapes are finished the DAAC operators will send an email to ‘schedops@mcst.gsfc.nasa.gov’ stating that the tapes are ready to be picked up.

MCST will provide the DAAC with blank DLT tapes as needed. Because of the cost of DLT tapes we will recycle these tapes after the data has been extracted. MCST will mark the tapes with a sticker and a count of the number of times the tape has had data written.

6.1 Data transfer Anomalies

In cases where the ECS data transfer to ACDIS fails, ECS will attempt to fix the problem and try re-pushing the data to the ACDIS. If the data transfer succeeds but the data received was not the data requested from MCST, then ACDIS will notify ECS and request the correct data to be pushed.

7 MCST Router and T3 support.

The router in 32/C101 named “MCST-ROUTER” is currently managed by MCST. In the event the router has problems or needs to be powered off; the following people should be called or paged before any action is taken.

1. Shane B. Milburn, Phone: 301.809.1226; Pager: 1.800.946.4646 PIN 145-1080
2. Owen Steinert, Phone: 301.809.1228; Pager: 1.800.946.4646 PIN 148-7954

Likewise, if the GDAAC has problems reaching the ftphost at MCST via the T3 the previously mentioned people should be called ASAP.

8 Conclusion

Over the past few years a number of verbal agreements have been made between the GDAAC and MCST. This document outlines those agreements so that as personnel come or go these agreements will continue to be known and upheld. MCST will keep this document in our document library under CM. No changes will be made to this document without having it first reviewed by both MCST and the GDAAC. If the proposed changes are acceptable, only then will the changes be committed into the document.

9 References

MCST Computer Processing Plan, V 1.2 Edward Stanford and Robin Morarre, January 1999.

ICD EDOS and EGS, Section 8 – EDOS-DAAC Interface Design, v.?? January 1998.

ACDIS Project Plan Outline, September 1998.

ACDIS Operational Guide (Draft).

ACDIS Design Implementation (Draft) V. 1.0.

ACDIS Requirements, Informal, October, 1998.

ACDIS Operations Concepts, Informal, October, 1998.

ACDIS Design Review, Jean Bedet, December 1998.

10 Appendix

Appendix A
(Sample E-mail template for Subscription)

```
To: subscrip@g0ins01u.ecs.nasa.gov
Subject: ECS Subscription Request

begin SubscriptionRequest
REQUEST_TYPE:            <ADD, DELETE, or REVISE>
ECS_ACCOUNT_NAME:        <name>
DELIVERY_EMAIL_ADDRESS:  <user@machine.domain>
EOS_DATA_PRODUCT:        <ESDTname>
EVENT_TYPE:              <INSERT, UPDATE, or DELETE>
SUBSCRIPTION_START_DATE: <MM/DD/YYYY>
SUBSCRIPTION_EXPIRATION_DATE:  <MM/DD/YYYY>
SUBSCRIPTION_MESSAGE:    <Text on one line, specified by requester>
DELIVERY_METHOD:        <FTP, 8mm, or N/A>
local_username: <account on host machine to which data is to be sent> *
local_password:    <password for account specified above> *
local_host:        <machine to which data is to be pushed> *
local_directory:    <path/directory> *
metadata_qualifier:    <TYPE RELATION VALUE>
subscription_ID:    <existing subscription number >
end SubscriptionRequest
```

Appendix B
(Sample Reciept that a submitted Order was accepted)

```
From: s ubscription  <subscrip@g0ins01u.ecs.nasa.gov>
Subject: ECS SUBSCRIPTION REQUEST ACCEPTED
X-Status:

Your subscription request has been accepted.

You will receive an e-mail message after your subscription
is entered into ECS.

REQUEST_TYPE:           ADD

ECS_ACCOUNT_NAME:     mcstuser

DELIVERY_EMAIL_ADDRESS:  mcst-data-delivery@mcst.gsfc.nasa.gov

EOS_DATA_PRODUCT:         MOD021KM

EVENT_TYPE:                INSERT

SUBSCRIPTION_START_DATE:            07/09/1999

SUBSCRIPTION_EXPIRATION_DATE:       07/16/1999

SUBSCRIPTION_MESSAGE:  MCST=179

DELIVERY_METHOD:       FTP

local_username:       anonymous

local_password:        ecs@g0ins01u.ecs.nasa.gov

local_host:             198.119.44.141

local_directory:       pub/

metadata_qualifier: RangeBeginningDate == 08/01/1999

metadata_qualifier: RangeEndingDate == 08/01/1999

metadata_qualifier: RangeBeginningTime >= 19:25:00.000000

metadata_qualifier: RangeEndingTime <= 20:05:00.000000

subscription_ID:
```

Appendix C
(Sample Event Notification)

```
From: CM ALLMODE <allmode@g0ins01u.ecs.nasa.gov>
To: mcst-data-delivery@mcst.gsfc.nasa.gov
Subject: ECS Notification
X-Status:

MOD000 MCST:
UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[GSF:DSSDSRV]:19:SC:MOD000.00
1:18044

ESDT Information:  MOD000.001:INSERT

User Information:  mcstuser

EventID:  346

Subscription ID:  620

Qualifier List:
UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[GSF:DSSDSRV]:19:SC:MOD000.00
1:18044 07/07/99 20:50:31  1 MOD000  08/15/1997 04:00:03.978949
08/15/1997 02:00:08.119178  PDS_ID P0420064AAAAAAAAAAAAAA97227040003000
18044 SC MOD000.001 P0420064AAAAAAAAAAAAAA97227040003001.PDS
:SC:MOD000.001:18044:1.CCSDS 0 1580593728 DRP1_OPS:MOD000.001   1 None
P0420064AAAAAAAAAAAAAA97227040003002.PDS :SC:MOD000.001:18044:2.CCSDS 0
580171872 DRP1_OPS:MOD000.001   1 None
P0420064AAAAAAAAAAAAAA97227040003003.PDS :SC:MOD000.001:18044:3.CCSDS 0
472350144 DRP1_OPS:MOD000.001   1 None
P0420064AAAAAAAAAAAAAA97227040003004.PDS :SC:MOD000.001:18044:4.CCSDS 0
1064687232 DRP1_OPS:MOD000.001   1 None
P0420064AAAAAAAAAAAAAA97227040003005.PDS :SC:MOD000.001:18044:5.CCSDS 0
1580593728 DRP1_OPS:MOD000.001   1 None
P0420064AAAAAAAAAAAAAA97227040003006.PDS :SC:MOD000.001:18044:6.CCSDS 0
1580593728 DRP1_OPS:MOD000.001   1 None
P0420064AAAAAAAAAAAAAA97227040003000.PDS :SC:MOD000.001:18044:7.CCSDS 0
724 DRP1_OPS!
:MOD000.001   1 None   6858.990722656250
```

Appendix D
(Sample Data sent/File list Notification)

```
From: CM ALLMODE<allmode@g0ins01u.ecs.nasa.gov>
Date: Wed, 7 Jul 1999 21:50:00 –0400
To: mcst-data-delivery@mcst.gsfc.nasa.gov
Subject: ECS Notification
X-Status:

ORDERID: NONE
REQUESTID: 18718629133898
USERSTRING:
FINISHED: 07/07/1999 21:50:00

MEDIATYPE: FtpPush
FTPHOST: acdis.gsfc.nasa.gov
FTPDIR: ftp/.xfer/xfer_store/mcst
MEDIA 1 of 1
MEDIAID:

        GRANULE:
UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[GSF:DSSDSRV]:19:SC:MOD000.00
1:18066
        ESDT: MOD000.001

                FILENAME: P0420064AAAAAAAAAAAAAA97227060000001.PDS
                FILESIZE: 529673000

                FILENAME: P0420064AAAAAAAAAAAAAA97227060000002.PDS
                FILESIZE: 472350000

                FILENAME: P0420064AAAAAAAAAAAAAA97227060000003.PDS
                FILESIZE: 1116550000

                FILENAME: P0420064AAAAAAAAAAAAAA97227060000004.PDS
                FILESIZE: 1580590000

                FILENAME: P0420064AAAAAAAAAAAAAA97227060000005.PDS
                FILESIZE: 1580590000


                FILENAME: P0420064AAAAAAAAAAAAAA97227060000000.PDS
                FILESIZE: 724

                FILENAME: SCMOD000.00118066.met
                FILESIZE: 29306
```

Appendix E
(Sample Expiration Notification)

```
From: CM ALLMODE  <allmode@g0ins01u.ecs.nasa.gov>
To: mcst-data-delivery@mcst.gsfc.nasa.gov
Subject: ECS Notification
X-Status:

Subscription Expire: Subscription to event 346 will expire on 08/07/99
```

11 Change Log

Date:	version	Reason for change.	Name of editor.
07/21/1999:	v1.0	Original document.	milburn
08/23/1999:	v1.1	Added MCST-Router and T3 support section. pages affected: cover, table of contents, 6, 7, 8, and 13.	milburn